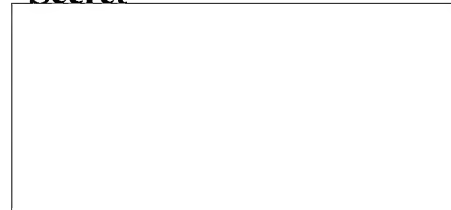




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## Science and Weapons Daily Review

**Monday**  
**2 December 1985**

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*SW SWDR 85-227C*

*2 December 1985*

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1 USSR: GRAVITATIONAL-WAVE RESEARCH AND THE MILITARY

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[REDACTED] Advanced sensor technology developed during the search for gravitational waves may be useful in remote sensing, submarine navigation, missile guidance, and long-range communication. [REDACTED]

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3 GREECE: ALLEGED NUCLEAR WEAPON DEVELOPMENT PROGRAM

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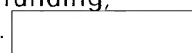
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CHINA: ACADEMY OF SCIENCES' RESPONSE TO REFORM



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In March 1985, the Communist Party officially endorsed China's ongoing S&T reforms to support better its economic and modernization goals. The Chinese Academy of Sciences, which is playing a major role in reaching these goals, has already instituted new developments in its funding, personnel, and technology transfer policies.



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## Science and Weapons Daily Review

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USSR: GRAVITATIONAL-WAVE RESEARCH AND THE MILITARY

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Gravitational waves are ripples in the structure of space-time--in many ways analogous to electromagnetic (radio) waves. Weak gravitational waves travel at the speed of light and are created by astrophysical sources (such as, supernova explosions, rapidly spinning neutron stars, and close binary star systems). Because gravitational-wave signals are extraordinarily weak, sensors to detect them must be ultra sensitive.

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Comment:

Advanced sensor technology developed during the search for gravitational waves may be useful in many areas such as remote sensing, submarine navigation, missile guidance, and long-range communication. However, we do not believe that gravitational-wave physics will have any direct practical applications to military or civilian affairs for at least the remainder of this century.

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Successful detection of gravitational waves probably would win a Nobel prize for the scientists involved and would open a new frontier in astronomy (similar to gamma-ray, X-ray, ultraviolet, infrared, and radio

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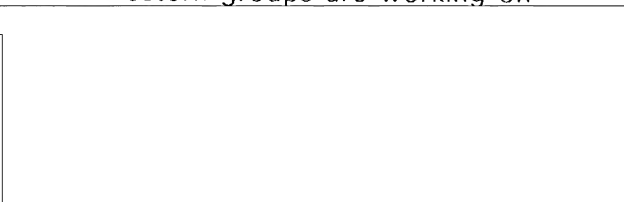
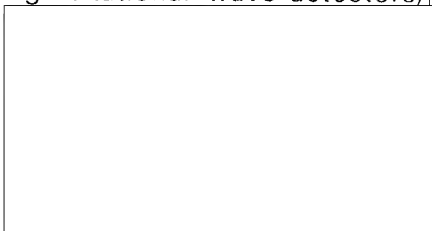
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astronomy). Approximately a dozen Western groups are working on  
gravitational-wave detectors;

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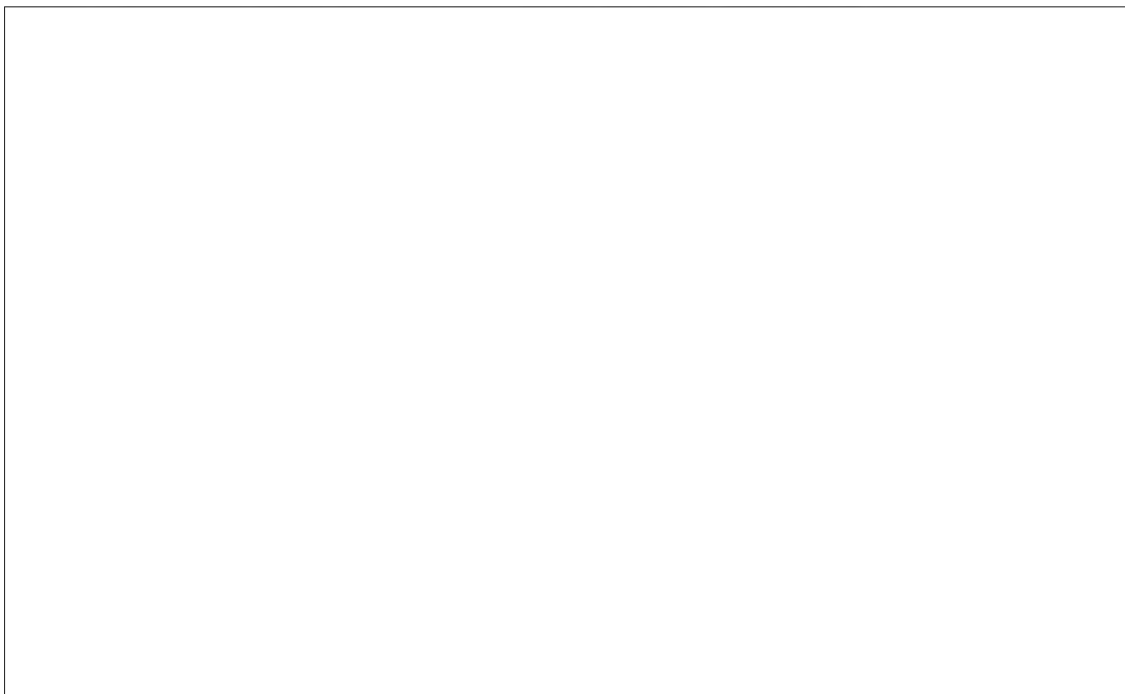


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GREECE: ALLEGED NUCLEAR WEAPON DEVELOPMENT PROGRAM

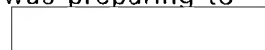


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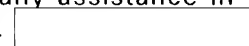
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In 1976 the Greek Minister of Defense denied reports that Greece was considering developing a "nuclear weapons plant," but stated that if the nuclear arms race developed outside of the small circle then having nuclear weapons, Greece would be among the first to join in. These remarks were made a month after a press report alleging that Turkey was preparing to acquire the capability to manufacture nuclear weapons.



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In 1970 Greece ratified the Nuclear Non-Proliferation Treaty (NPT) in which it agreed not to receive the transfer of nuclear weapons or other nuclear explosive devices, not to manufacture or otherwise acquire nuclear weapons or nuclear explosive devices, and not to seek or receive any assistance in manufacturing nuclear weapons or other nuclear devices.



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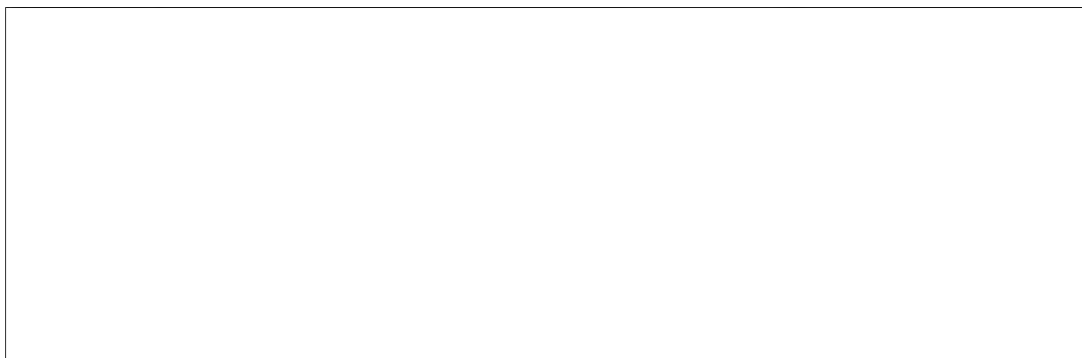
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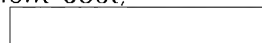
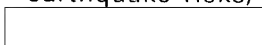
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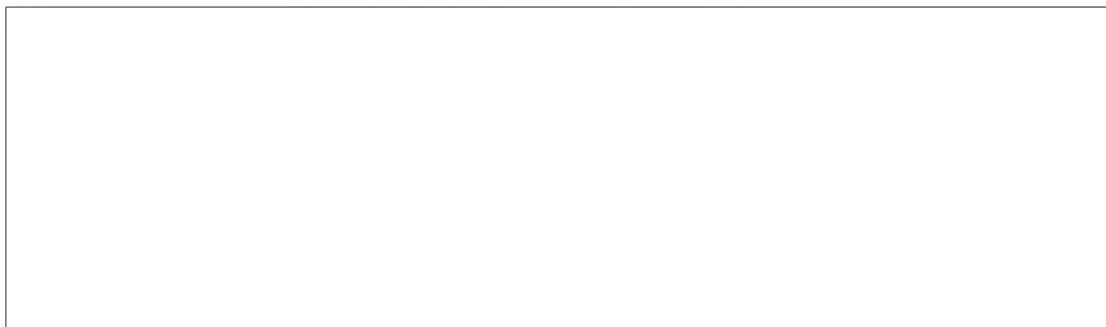


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In October 1985, the Chairman of the Greek Committee on Energy, Research, and Technology announced that Greece had decided not to adopt the use of nuclear energy at present because of the high initial investment cost, earthquake risks, and the problem of nuclear waste disposal.



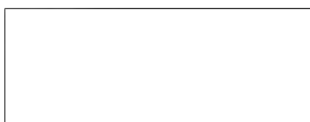
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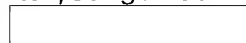
## CHINA: ACADEMY OF SCIENCES' RESPONSE TO REFORM



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In March 1985 the Communist Party officially endorsed China's ongoing science and technology (S&T) reforms to support better that country's economic and modernization goals. Within the context of these reforms, the role of the Chinese Academy of Sciences has been a central concern and changes are to be instituted in several ways:

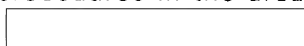
- The Academy will divest itself of many of its approximately 120 institutes, putting some under local authorities or ministries and merging others.
- Applied research will be emphasized over basic research.
- Funding will be transformed from an allocation subsidy system to one based on peer review, supporting only quality research proposals, and contractual agreements with industrial customers.
- Scientific personnel will be rewarded for significant work and encouraged to make outside research commitments for their own personal profit.
- The Academy will give a more responsible role to its younger S&T personnel, and more students will be sent abroad.



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## Comment:

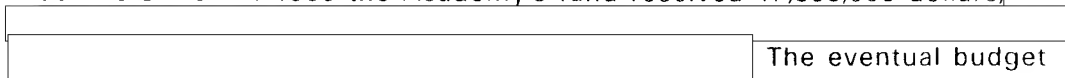
Although the Academy has not reduced the number of its institutes (and probably will not make any dramatic cuts in the future), it has instituted some new procedures in the areas of funding, personnel, and transfer of technology.



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Funding

After reviewing the Academy's current budgetary proposals and actions, it appears that the Academy is taking seriously the funding dictates of the S&T reforms. In 1985 the Academy's fund received 17,500,000 dollars,

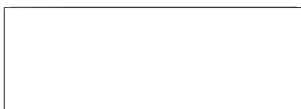


The eventual budget

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allocated by the Chinese Government will be for basic research only. The remaining two-thirds of the budget will have to be obtained through contracts with industry, thus forcing every Academy organization to emphasize productivity and turn a profit.

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Directors of each of the Academy's approximately 120 institutes must submit a five-year plan detailing new programs and prioritized goals along with their budgets. In addition to promoting budgetary economy among the individual institutes, Academy President Lu Jiaxi will withhold a portion of each institute's budget to create a special general fund. This measure is designed to encourage competition among the institutes.

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To facilitate modernization, the Academy has created two new bureaus, the Bureau of Contracts and the Bureau of Development. The Bureau of Contracts provides the bureaucratic mechanism through which the institutes effect research contracts with industrial enterprises. The Bureau of Development provides the mechanism to relate the research and development requirements of enterprises and to administer technological developments transferred to industry.

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#### S&T Personnel

The Academy's recent concerns and efforts demonstrate its serious intent to address rewards, the enhanced role of younger scientists, and overseas scientific training. The Chinese media reports that the Academy has set-up a fund of 800,000 dollars to support talented young scientists under the age of 35. In addition, a 3.3-million-dollar special fund, at the Academy President's disposal, has been established to reward those contributing to major research projects. The fund's aim is to encourage scientists to dedicate themselves to the modernization program.

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An article by Yan Dongsheng, a vice president of the Academy, emphasizes that its most eminent task is to cultivate large numbers of young scientists. Yan adds that qualified younger S&T personnel should be


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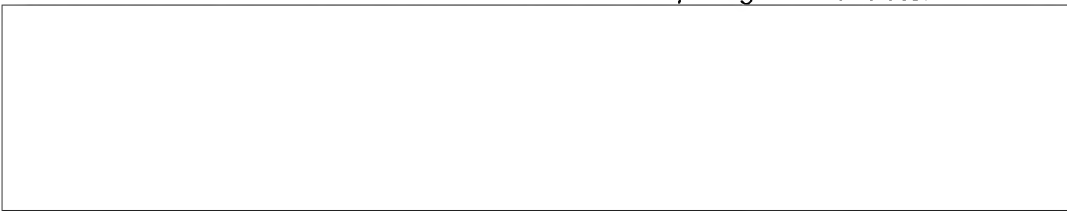


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promoted to positions of higher research regardless of their seniority. Particularly, they need to be placed in positions as members of the Department of the Scientific Council (where the average age is over 70), members of academic commissions, and members of editor boards of scientific publications. Thus far, at least 40 Academy institutes have replaced their old directors with younger men. 

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The Academy continues to support higher studies abroad or joint research programs and international conferences for its younger scientists.



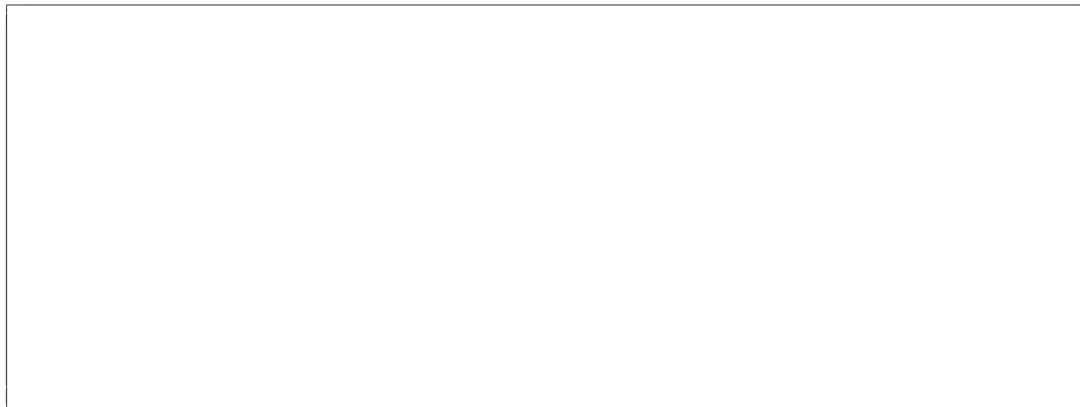
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#### Transfer of Technology

Responding to the needs of modernization, the Academy has initiated some recent innovations pertaining to both internal and external transfer of needed technology. These efforts encompass the establishment of new corporations, associations, and companies within the Academy, as well as laboratories and institutes opened to foreign research personnel.



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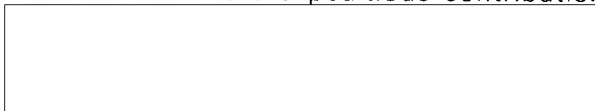


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In July 1985 the Academy announced that it is opening 17 laboratories and two research institutes to foreign researchers. Foreign scientists will be permitted to work over a sustained period of time, fully participating in laboratory research. At the outset, the Academy would like foreign experts to work in such significant areas as physics, laser spectrum studies, and optics. Although this move should be viewed as a positive means of establishing more scientific cooperation with the United States, the expertise of foreign scientists working in important laboratories will be a definite and more expeditious contribution to the transfer of technology.



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